



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/612,705

06/30/2003

David P. McConville

884.948US1

3734

21186

7590

05/08/2006

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.

P.O. BOX 2938

MINNEAPOLIS, MN 55402

EXAMINER

PHAN, THIEM D

ART UNIT

PAPER NUMBER

3729

DATE MAILED: 05/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/612,705

Applicant(s)

MCCONVILLE ET AL.

Examiner

Tim Phan

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 February 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-67 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-67 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicants' response to the Restriction Requirement, filed on 2/27/06 is acknowledged.

The Restriction mailed on 1/23/06 has been carefully reviewed and is held to be proper. Applicants did not distinctly and specifically point out any logical error in the Restriction Requirement. Moreover, due to the lack of traversal on the merits, Applicants' election Claims 40-48 and new claims 49-67, has been treated as an election without traverse.

Accordingly, Claims 10-19 and 31-39 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected Group, there being no allowable generic or linking claim.

The Restriction filed on 1/23/06 is hereby **made Final**.

An Office Action on the merits of Claims 40-67 now follows.

Title

2. The following title is suggested: "A System for Making a Conductive Circuit on a Substantially Non-conductive Substrate".

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 44-47 and 49-67 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claims 44-47, 61-64 and 66, the claimed invention recites the limitation "the sheet" in these claims. There is insufficient antecedent basis for this limitation in the claims.

With regard to claims 49-67, the claimed invention recites the limitation "by non-insulative material" in claim 49, line 3. It is unclear and confused how and why two conductive materials are separated from each other by non-insulative or conductive material.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 40-47, 49-55, 58, 61-65 & 67 are rejected under 35 U.S.C. 102(b) as being anticipated by Carey (US 5,173,442).

With regard to claim 40, Carey teaches a system (Fig. 6a, 40 & 11a, 108) for forming channels and vias in insulating layers, comprising:

- an indenter (Fig. 6a, 40) adapted to form a plurality of indentations (Fig. 6a, 20) on a major surface of the substrate (Fig. 6a, 14);
- a plater adapted to plate conductive material (Fig. 9b, 90) on the major surface of the substrate and within the indentations formed in the major surface of the substrate; and
- a grinder or polishing means adapted to remove (Fig. 11a, 108; col. 10, lines 19-21) a portion of the conductive material plated on the major surface of the substrate to leave conductive material within the indentations in the major surface of the substrate.

With regard to claim 41, Carey teaches that the grinder or polishing means is adapted to remove a portion of the conductive material (Fig. 11a, 90) between the plurality of indentations.

With regard to claim 42, Carey teaches that the grinder or polishing means is adapted to remove a portion of the conductive material (Fig. 11b, 22) within the plurality of indentations.

With regard to claim 43, Carey teaches that the grinder or polishing means is adapted to remove a portion of the conductive material within the plurality of indentations (Fig. 11b, 22) and the conductive material over the non-conductive material (Fig. 11b, 112) between the

indentations to form a planar surface (Fig. 11c, 110) including non-conductive material and conductive material.

With regard to claim 44, as best understood, Carey teaches that the indenter (Fig. 6c, 40) is adapted to form indentations which form an opening (Fig. 6e, 22) in a sheet (Fig. 6e, 14).

With regard to claim 45, as best understood, Carey teaches that the indenter (Fig. 6c, 40) is adapted to form indentations which form an opening (Fig. 6e, 20) passing through a sheet (Fig. 6e, 14).

With regard to claim 46, as best understood, Carey teaches that the indenter (Fig. 6c, 40) is adapted to plastically deform a sheet (Fig. 6e, 14).

With regard to claim 47, as best understood, Carey teaches that a sheet is formed of non-conductive plastic or polymer (Fig. 6a, 14).

With regard to claim 49, as best understood, Carey teaches that the conductive material (Fig. 11c, 113) within at least some of the plurality of indentations is separated from the conductive material within some of the other indentations by non-conductive material (Fig. 11c, 14).

With regard to claim 50, as best understood, Carey teaches that the grinder or polishing

means removes a portion of the conductive material within the plurality of indentations (Fig. 11b, 22).

With regard to claim 51, as best understood, Carey teaches that the grinder or polishing means removes a portion of the conductive material within the plurality of indentations (Fig. 11b, 22) and the conductive material over the non-conductive material (Fig. 11b, 112) between the indentations to form a planar surface (Fig. 11c, 110) including non-conductive material and conductive material.

With regard to claim 52, as best understood, Carey teaches that the indenter includes a plate having a negative (Fig. 6a, 42) of the indentations (Fig. 6a, 20) in the substrate.

With regard to claim 53, as best understood, Carey teaches that the indentations include at least one channel (Fig. 6e, 22).

With regard to claim 54, as best understood, Carey teaches that the indentations include at least one pad (Fig. 6c, 59).

With regard to claim 55, as best understood, Carey teaches that the indentations include at least one via (Fig. 6c, 20).

With regard to claim 58, as best understood, Carey teaches that the indenter includes a

plurality of planar surfaces (Fig. 6c, 44 & 46).

With regard to claim 61, as best understood, Carey teaches that the indenter (Fig. 6c, 40) is adapted to form indentations which form an opening (Fig. 6e, 22) in a sheet (Fig. 6e, 14).

With regard to claim 62, as best understood, Carey teaches that the indenter (Fig. 6c, 40) is adapted to form indentations which form an opening (Fig. 6e, 20) passing through a sheet (Fig. 6e, 14).

With regard to claim 63, as best understood, Carey teaches that the indenter (Fig. 6c, 40) is adapted to plastically deform a sheet (Fig. 6c, 14).

With regard to claim 64, as best understood, Carey teaches that a sheet is formed of non-conductive plastic or polymer (Fig. 6a, 14).

With regard to claim 65, as best understood, Carey teaches a base (Fig. 6c, 12), well known to produce a reaction force that counteracts the indenter (Fig. 6c, 40) during the stamping.

With regard to claim 67, Carey teaches that the grinder or polishing means removes a portion of the conductive material (Fig. 11b, center 22) between the plurality of indentations.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 59 and 60 as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey.

With regard to claim 59, Carey teaches a system for forming channels and vias in insulating layers through grinder or polishing means (Fig. 11a, 108), which reads on applicants' claimed invention; except for having a grinder apparatus with a plurality of grinding elements.

It would be obvious to one of ordinary skill in the art at the time the invention was made to have a grinder apparatus with a plurality of grinding elements in order to speed up the grinding process.

With regard to claim 60, Carey teaches a system for forming channels and vias in insulating layers through indenting means (Fig. 6a, 40), which reads on applicants' claimed invention; except for having an indenting apparatus with a plurality of indenting elements.

It would be obvious to one of ordinary skill in the art at the time the invention was made to have an indenting apparatus with a plurality of indenting elements in order to speed up the

indenting process.

9. Claims 48, 56, 57 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Carey in view of Schilson (US 6,026,563).

With regard to claims 48 and 56 (as best understood), Carey teaches a system for forming channels and vias in insulating layers through an indenter (Fig. 6c, 40), which reads on applicants' claimed invention.

Schilson teaches a system (Fig. 4) of making flat cable by an indenter, comprising:

- a first roller apparatus (Fig. 2, 70) adapted to form a plurality of indentations in the cable (Fig. 1, 10); and
- a second roller apparatus (Fig. 2, 60) adapted to form a plurality of indentations in the cable.

It would be obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings by applying the indenting system by roller, as taught by Schilson and not its general structure, to the apparatus for forming channels and vias in insulating layers or substrate in order to have a continuous indentation structure and speed up the indentation process.

With regard to claim 57, as best understood, Schilson teaches that the roller includes an interchangeable plate (Col. 6, lines 18-22) having a negative of the indentations in the compressed material.

With regard to claim 66, as best understood, Carey teaches a system for forming channels and vias in insulating layers through an indenter (Fig. 6c, 40), which reads on applicants' claimed invention.

Schilson teaches a system (Fig. 4) of making flat cable by an indenter, comprising:

- a first load roller (Fig. 2, 70); and
- a second load roller (Fig. 2, 60), wherein the first load roller and the second load roller are adapted to place a load on the major surface of a sheet (Fig. 1, 10) and on another surface of a sheet.

It would be obvious to one of ordinary skill in the art at the time the invention was made to combine the two teachings by applying the indenting system by roller, as taught by Schilson and not its general structure, to the system for forming channels and vias in insulating layers or substrate in order to have a continuous indentation structure and speed up the indentation process.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tim Phan whose telephone number is 571-272-4568. The

Art Unit: 3729


examiner can normally be reached on M - F, 9AM - 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tim Phan
Examiner
Art Unit 3729

tp
May 2, 2006



A. DEXTER TUGBANG
PRIMARY EXAMINER